AMENDMENT TO THE CLAIMS

1. (Currently amended) A method for manufacturing p-type nitride semiconductor comprising:

a semiconductor layer forming process for forming a low resistivity p-type nitride semiconductor layer on a substrate held at a temperature of 950°C or higher by introducing p-type dopant source, nitrogen source and Group III source on said substrate; and

a cooling process for cooling the substrate bearing said p-type nitride semiconductor layer,

wherein during said cooling process, the substrate is in an atmosphere containing 0% - 50% hydrogen in capacity percent, and the temperature of the substrate is reduced to approximately 600°C, and

wherein the hole carrier concentration of said p-type nitride semiconductor layer decreases during said cooling process.

2. (Currently amended) The method for manufacturing p-type nitride semiconductor recited in claim 1, wherein the decrease ~~rate~~ of said hole carrier concentration is 0% - 95%.

3. (Original) The method for manufacturing p-type nitride semiconductor recited in claim 1 or claim 2, wherein said cooling process contains a procedure during which the substrate is cooled from the substrate temperature in said semiconductor layer forming process to 600°C within 30 min.

4. (Original) The method for manufacturing p-type nitride semiconductor recited in claim 1, 2 or 3, wherein the atmosphere in said semiconductor layer forming process contains hydrogen for 5% - 70% in capacity percent.

5. (Canceled)

6. (Currently amended) The method for manufacturing p-type nitride semiconductor recited in claim 1, 2, or 3, wherein during ~~the atmosphere introduced during a procedure, in~~ said cooling process, the substrate is in an atmosphere containing ammonia ~~for cooling a substrate from said substrate temperature in said semiconductor layer forming process to 600°C contains ammonia, NH_3~~.

7. (Currently amended) A method for manufacturing p-type nitride semiconductor comprising:

a p-type nitride semiconductor layer forming process for forming a low resistivity p-type nitride semiconductor layer on a substrate held at a temperature of approximately 950°C or higher by introducing p-type dopant source, nitrogen source and Group III source on said substrate, and

a cooling process for cooling the substrate bearing said p-type nitride semiconductor layer; wherein

said substrate is cooled during a procedure, in said cooling process, for cooling said substrate from approximately 950°C to approximately 700°C, under certain specific combinations of the hydrogen concentration in atmosphere and the cooling time where the p-type nitride semiconductor layer has a hole carrier concentration of approximately $1 \times 10^{16} cm^{-3}$ or higher at room temperature ~~can maintain the low resistivity property~~.

8. (Original) The method for manufacturing p-type nitride semiconductor recited in claim 7, wherein

the combination of said hydrogen concentration in atmosphere and said cooling time falls within a region specified by points A - B - C - D - E - F, in an X - Y coordinate, X axis representing said hydrogen concentration (%) in atmosphere, Y axis representing said cooling time (min.); where, the point A(50, 1. 0), point B(30, 1. 8), point C(10, 4. 1), point D(0. 15), point E(0, 0. 5) and point F(50, 0. 5).

9. (Currently amended) A method for manufacturing p-type nitride semiconductor comprising:

a p-type nitride semiconductor layer forming process for forming a low resistivity p-type nitride semiconductor layer on a substrate held at a temperature of approximately 950°C or higher by introducing p-type dopant source, nitrogen source and Group III source on said substrate, and

a cooling process for cooling the substrate bearing said p-type nitride semiconductor layer; wherein

said substrate is cooled at the vicinity of approximately 800°C, in said cooling process, under certain combinations of the hydrogen concentration in atmosphere and the cooling rate, where the p-type nitride semiconductor layer has a hole carrier concentration of approximately 1 x $10^{16}cm^{-3}$ or higher at room temperature ~~can maintain the low resistivity property~~.

10. (Original) The method for manufacturing p-type nitride semiconductor recited in claim 9, wherein

the combination of said hydrogen concentration in atmosphere and said cooling rate falls within a region specified by points O - P - Q - R - S - T, in an X - Y coordinate, X axis representing said hydrogen concentration (%) in atmosphere, Y axis representing said cooling rate (°C/ min.); where, the point O(50, 250), point P(30, 140), point Q(10, 61), point R(0. 17), point S(0, 500) and point T(50, 500).

11-12. (Canceled)

13. (Previously presented) The method for manufacturing p-type nitride semiconductor recited in claim 1 or claim 2,

wherein said cooling process cools the substrate from the substrate temperature in said semiconductor layer forming process to 600°C within 5 min.

14. (Previously presented) The method of manufacturing the p-type nitride semiconductor recited in claim 1, wherein the hydrogen content of said atmosphere is greater than 0%.

15. (New) The method of manufacturing the p-type nitride semiconductor recited in claim 1, wherein the hole carrier concentration is approximately $1 \times 10^{16} cm^{-3}$ or higher at room temperature.

16. (New) The method of manufacturing the p-type nitride semiconductor recited in claim 1, wherein the cooling time for cooling the substrate from 950°C to approximately 600°C is controlled so that the hole carrier concentration is approximately $1 \times 10^{16} cm^{-3}$ or higher at room temperature.